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Citation: Shokri, Alireza and Nabhani, Farhad (2018) Investigating the view of quality management success factors amongst future early career operations managers. In: QMOD 2017 - 21st Quality Management and Organisational Development Conference, 21st - 24th August 2018, Cardiff, Wales.

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Investigating the view of quality management success factors amongst future early career operations managers

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Key words – Quality Management, Operations Management, Human Resource Management, Early Year Professionals, MBNQA Model, Non-Parametric Test

Category – Research paper

ABSTRACT

Purpose - This research aims to investigate the gap between the current vision and knowledge of future early career operations managers (OM) and common strategic total quality management (TQM) frameworks such as Malcolm Baldrige National Quality Awards (MBNQA).

Design/Methodology/Approach - A survey questionnaire for different groups of participants as current higher education students was developed to identify the gap and analyse the significance of these groups on the factors in TQM framework. The Kruskal-Wallis test as the non-parametric quantitative analysis technique was adopted for this research.

Findings – A new set of TQM factors with necessity of more knowledge and understanding of future generation was identified, followed by identification of clear differences amongst different groups of this generation.

Practical Implications – A sustainable OM practice needs managers and leaders with a sustainable knowledge development of quality management (QM); and as the result of this study, the current vision of future young operations managers would not echo this.

Research Limitations/Implication – This research study contributed significantly to the existing research about common QM models and their integration with theories relevant to organisational culture. The data collection could have been extended further in the higher education sector or beyond that.

Originality/Value - This study has a systematic, non-parametric approach towards currently fragmented QM analysis, and is integrated with human resource and visionary elements of future young OM and universal QM models and theories.

1. Introduction

Operations management philosophy has progressed significantly in recent decades as the result of globalisation, cultural integration and sustainable mass customisation. This obliges the future Operations Managers (OM) to transform their operations management and leadership philosophy towards quality excellence and efficiency. Recent research has sought OM and their employees possess requisite job skills and a unifying sense of quality in their

organisation (Jayaram and Xu, 2016). Quality is defined as delighting all stakeholders, taking context into consideration (Van Kemenade, 2014).

The “Context” paradigm of QM was introduced as the future trend embedded in operational and strategic factors and dimensions of operations management, to handle the emergent change in QM, with more contextual approaches promising flexibility and adaptability (Van Kemendae, 2014). Despite heavy longitudinal studies in QM integration with sector, industry and size contexts and innovative evolution of operations management (Dong et al, 2016; Dora and Gellynck, 2015; Mosadeghrad, 2015; Kanpp, 2015; Isa and Usmen, 2015; Graham et al, 2014; Bhat et al, 2014; Algasem et al; 2014; Ergun et al, 2014; and Phan and Chambers, 2013), there is insufficient emphasis on QM philosophies, models, practices and data as part of OM evolution for the future to promote more sustainable and competitive management (Stanton et al, 2014).

On the other hand, the crucial role of top management commitment on QM (Njeru and Omondy, 2016) and the evolution of the QM concept from competition-driven to an established culture, with a proactive approach, has been highlighted (Weckenmann et al, 2015). Therefore, this puts more pressure on future OM to enhance the organisation, environment and workforce for the future in order to meet satisfactory customer quality standards. However, it was suggested that the examination of QM with a successful theoretical and conceptual approach in a business is strongly fragmented in the real world (Evans, 2013). This prescribes the necessity of more critical analysis of the vision of future OM about QM. We intended to identify the human and workplace elements – relate critical success factors for QM in the vision of future young OM and also investigate the distinctive gap between their vision and the common critical success factors of the respective QM models.

We describe the future young OM as “early year professionals (EYPs)” in their future roles and have still no professional and management experience and with critical need of sustaining leadership power (Starr, 2016; and Hallet, 2013). Despite introducing EYPs as a homogeneous group with differing values, attributes or operations than the previous generation (Ng et al, 2012), more recent studies revealed that their job attributes are heterogeneous (Guillot-Soulez and Soulez, 2014). This generation in different cohorts or proxy such as gender, age, work and education experience differs remarkably from previous generations. With the support from previous studies (Guillot-Soulez and Soulez, 2014), this study intends to focus on young potential graduates as future senior OM in order to exclude the effect of career stage, which is a recurrent problem in generational analysis.

2. Total Quality Management (TQM) model approaches

TQM is a crucial philosophy that facilitates young OM to experimental problems with unknown solutions in order to establish quality and sustainably enhance operations (Jimenez-Jimenez et al, 2015; and Phan and Chambers, 2013). However, despite a great level of recognition for this philosophy, some researchers admit that there is no guarantee of TQM success as this is a heterogeneous philosophy with a lack of clear prescription (Mosadeghrad, 2015 and Sabella et al, 2014). In response to this challenge, Graham et al (2014) have recommended operations management contribution and commitment to generate clear results and minimise the ambiguity of TQM as a key driver of TQM success.

The essence of operations management visibility and interdependency of critical factors, or TQM elements (Suarez et al, 2014) has revealed a greater need of systematic and well-proven models to be utilised in organisations. This advocates the role of any OM as facilitators to establish QM in their operations management philosophy through developing appropriate

visions and utilising appropriate models. There are different QM models and frameworks that directly or indirectly reflect principles and hard and soft elements of TQM such as the Malcolm Baldrige National Quality Awards (MBNQA) (Jones, 2014), European Foundation for Quality Management (EFQM) Excellence Model (Suarez et al, 2014), Competing Value Framework (CVF) (Do Nascimento Gambi et al, 2015) and Quality Management Extension Model (Slack et al, 2013). In addition to these models, the theories of some quality gurus such as Deming, Juran and Crosby (Singh et al, 2013) can be used as theoretical platforms to extract quality constructs which could be considered by any operations manager including future young OM with their distinctive personality in this century.

The MBNQA model was selected to be used as the main guiding framework for this research, as a highly recognised structured model with universality and relationship with seven different categories that has been acknowledged by both scholars and practitioners (Moonsamy and Singh, 2014). The categories or factors that each consists of various indicators include; “leadership”, “strategic planning”, “customer focus”, “measurement, analysis and knowledge management” integrated with “workforce focus”, “operations” and “result”, with all seven factors supported by the “core values” (Jones, 2014; and Sabella et al, 2014).

Visionary and transformational leadership and organisational culture was introduced as one of the main TQM constructs to facilitate change and creativity (Knapp, 2015; Dora and Gellynck, 2015; Suarez et al, 2014; Moonsamy and Singh, 2014; and Asif et al, 2013). Strategic decision making in operations management and re-engineering was noted by current operations research (Venkat et al, 2015). Planning for QM was highlighted in Juran’s theory of QM (Njeru and Omondi, 2016). Rao (2015) emphasised that successful leaders require clear strategy with stretched goals for employees, as Jack Welsh successfully did in General Motors (GM) through the Six Sigma quality tool. According to NIST (2016), efficient work systems must also be designed in a way that allows an organisation to be agile and protect intellectual property. For instance, workplace flexibility practices have a strong positive relationship with strategic corporate performance (Whyman et al, 2015).

Market research and customer engagement are essential for OM to identify customers’ needs and translate them into appropriate organisational requirements in order to satisfy them (Njeru and Omondi, 2016; and Mosadeghrad, 2015). Social media as a recently-used, digital marketing tool was suggested as one of the most efficient and interactive norms of capturing the ever-demanding voice of customer (VOC) and global market research for technology and innovation – oriented OM now and in the future (Chan et al, 2016; and Evans, 2013).

Longitudinal studies of TQM practices found a positive association between HR practices such as; empowerment, extensive training, performance appraisal and teamwork with TQM and organisational performance in the manufacturing and service sector (Stanton et al, 2014). Training and TQM-driven performance management were introduced as integral intellectual competence (IC) factors, which act as catalysts, to develop knowledge, skill and attitude (Harley et al, 2010). Hilton and Sohal (2012) supported the idea of developing a manager’s and employee’s capacity as the first priority to pursue any quality strategy.

Research studies have revealed that the pursuit of QM at an operational or process level is the ultimate formula to TQM (Moonsamy and Singh, 2014; and Suarez et al, 2014). Process improvement and control is a result of strategic management and human resource development and was suggested as part of the TQM philosophy to minimise variation and promote QA culture in the organisation (Asif et al, 2013). This practice must be continuously reviewed and modified to create CI culture which is another important indicator to establish

TQM. The contemporary research (Van Kemenade, 2014) recognised CI as an ongoing improvement process with a crucial role in a TQM environment.

Emergence of technological-based management and effective, collaborative and interactive information management systems and performance measurement were recommended as the essential element to be more highly recognised and promoted by OM in the future (Mosadeghrad, 2015). Creating the knowledge management pool and a continuous, cohesive and collaborative tacit and explicit knowledge and information sharing would promote effective QM practices (Pascal et al, 2013) and broaden effective operations management experiential learning (Roth et al, 2016).

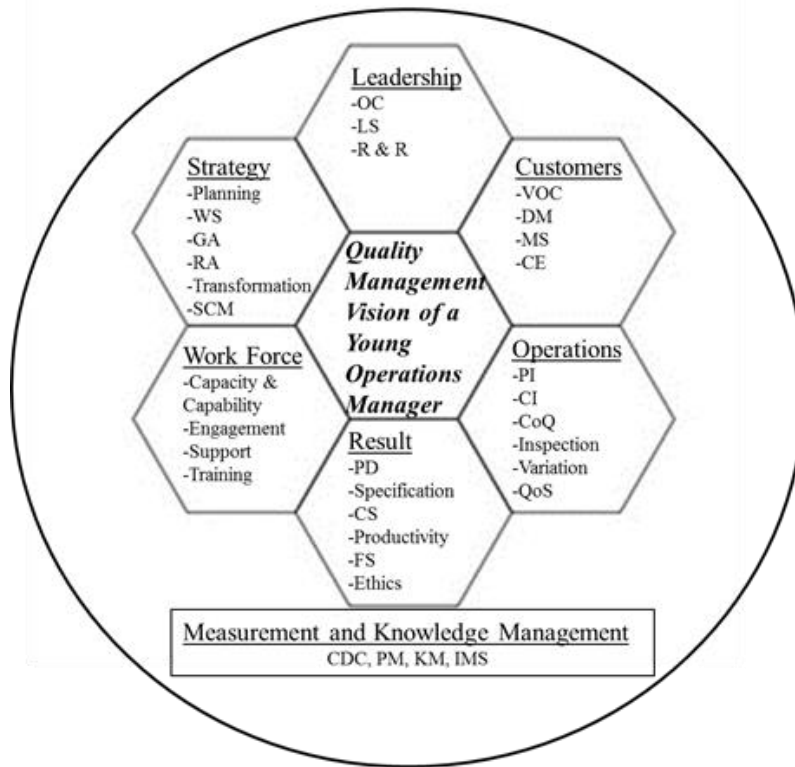
The human-focused and intelligent two-folded approach of QM, as suggested by Weckenmann et al (2015), Jimenez-Jimenez (2015) and Van Kemendae (2014), would encourage OM to produce a higher quality organisation, environment and workforce for the future considering ethics, governance and financial performance. Notwithstanding, perceived customer satisfaction, in an ever-growing and considerably demanding environment, is a challenge for OM who want to excite their customers due to complex customer satisfaction rubric and possible external and internal mediating factors. Asif et al (2013) brought some very interesting issues to attention, which include social and ethical considerations in a broader context and environment as an essential indicator for the MBNQA. This has sparked significant attention towards ethics and social responsibility. Therefore, a three -dimensional sustainable OM with social, environmental and financial perspectives has been increasingly promoted by scholars and OM as a future trend (Walker et al, 2014).

The system is used in any organisation in different sectors and of differing sizes to guide and measure the success of organisational and operational excellence in terms of quality and process improvement (Jones, 2014). The crucial TQM indicators that were presented in the MBNQA and other QM models and theories have guided authors to develop and propose a “multi-hexagonal conceptual framework” (Figure 1).

Therefore, it was decided to investigate the vision of potential future, young OM for every single category in order to investigate the current view of these future EYPs about QM key performance indicators (KPIs) and find the most significant gaps. Respectively, differences in relation to the QM vision amongst ergonomic groups of participants as future OM with hypothetically heterogeneous job attribute will be identified. Hence, two research questions (RQ) have been developed by authors:

RQ1. What are the key TQM KPIs with greatest deal of knowledge gap for future OM?

RQ2. Is there any significant difference in the vision of future young OM in relation to their ergonomic aspects about TQM KPIs?



Leadership: OC (organisational Culture), LS (leadership Style), R&R (Reward & Recognition); Strategy: WS (Work System), GA(Gap Analysis), RA (Resource Analysis), SCM (Supply Chain Management & Partnership); Customers: VOC (Voice of Customer), DM (Digital marketing), MS (Market Segmentation), CE (Customer Engagement); Measurement & Knowledge Management: CDC (Comparative Data Collection), PM (Performance Measurement), KM (Knowledge Management), IMS (Information Management System); Operations: PI (Process Improvement & Design), CI (Continuous Improvement), CoQ (Cost of Quality), QoS (Quality of Supply); Result: PD (Performance Dimensions), CS (Customer Satisfaction), FS (Financial Stability)

Figure 1 – A common Multi –Hexagonal Conceptual QM framework (retrieved from MBNQA)

3. Research methodology

A survey questionnaire instrument was utilised to cover an appropriate number of future OM with purposive sampling. As supported by Guillot-Soulez and Soulez (2014), it was decided to target the young and educated generation, with no particular permanent management role and extensive experience as future OM, to prevent the effect of career stage in the survey. Nonetheless, their casual work experience, during or before their education has been considered as non-career stage and therefore was included in the survey. This means that the authors intended to investigate the pure vision of future OM among EYPs. Two different cohorts of people were targeted in the format of two case studies, as post A-level students and to be – graduated students, to investigate the knowledge gap and reflect RQ1. The demographic measures such as age, gender, casual work experience and course of study have been analysed to reflect RQ2.

Questions reflected predominantly MBNQA factors and their indicators, while covering some demographic measures. Table I presents indicators in each MBNQA category that were used in this questionnaire and their corresponding TQM model and theory as well as literature sources. The questionnaire consists of two sections: Section 1 of the questionnaire concerned with demographic questions and Section 2 included questions to reflect all indicators in the MBNQA. The Likert score of 1 (as lowest level of agreement) to 7 (as highest level of agreement) and also ranking model were used in the questionnaire structure.

Table I – MBNQA indicators and their TQM corresponding models and theoretical support

<i>MBNQA Factors</i>	<i>Indicators</i>	<i>Themes</i>	<i>Supporting quality management model</i>	<i>Theoretical support</i>
<i>Leadership</i>	Organisational culture	group culture, developmental culture, rational culture, hierarchical culture	CVF, EFQM, MBNQA, Deming Points, QM extension model	NIST (2016); Sabella (2014); Asif et al (2013)
	Leadership style	Participative, democratic, situational, goal oriented, dictatorial (autocratic)	CVF, EFQM, MBNQA, Deming Points, QM extension model	NIST (2016); Sabella (2014); Asif et al (2013); Singh et al (2013)
	Rewarding and recognition	Importance of the rewarding and recognition	EFQM, MBNQA, Deming Points	NIST (2016); Sabella (2014); Singh et al (2013)
<i>Strategy</i>	Planning	Stretched objectives	EFQM, MBNQA, Deming Points	NIST (2016); Sabella (2014); Asif et al (2013)
	Work system	Flexibility and adaptability	EFQM, MBNQA	NIST (2016); Sabella (2014)
	PDCA Cycle (Gap Analysis)	Agreement on gap analysis	EFQM, MBNQA, Deming Points, QM extension model	NIST (2016); Sabella (2014)
	Resource analysis	Agreement on resource analysis	EFQM, MBNQA	NIST (2016); Sabella (2014)
	Transformation	Importance of multi-approached transformation	EFQM, MBNQA, Deming Points	NIST (2016); Sabella (2014); Singh et al (2013)
<i>Customer</i>	Supply chain management and partnership	Agreement on partnership approach with suppliers	EFQM, MBNQA, Deming Points, QM extension model	NIST (2016); Sabella (2014); Asif et al (2013); Singh et al (2013)
	VOC	Importance of listening to VOC	MBNQA, QM extension model	NIST (2016); Sabella (2014); Asif et al (2013)
	Digital marketing	Importance of social media	MBNQA, QM extension model	NIST (2016); Sabella (2014)
	Market segmentation	Importance of segmentation to attain information	MBNQA, QM extension model	NIST (2016); Sabella (2014)
	Customer engagement	Importance of customer engagement	MBNQA, QM extension model	NIST (2016); Sabella (2014); Asif et al (2013)
<i>Measurement, analysis and knowledge management</i>	Comparative data collection	Importance of external information	MBNQA	NIST (2016); Sabella (2014); Asif et al, 2013
	Performance measurement	Importance of performance measurement	MBNQA	NIST (2016); Sabella (2014); Asif et al (2013)
	Knowledge management	Importance of explicit and implicit knowledge transfer	MBNQA, EFQM	NIST (2016); Sabella (2014); Singh et al (2013)
	Information management system	Importance of information management systems	MBNQA, EFQM	NIST (2016); Sabella (2014); Asif et al (2013); Singh et al (2013)
	Employee capacity and capability	Importance of quality and quantity of employees	MBNQA, EFQM, Deming Points	NIST (2016); Sabella (2014); Asif et al (2013)
<i>Workforce</i>	Employee involvement and	Importance of employee	MBNQA, EFQM, Deming Points	NIST (2016); Sabella (2014);

<i>Operations</i>	engagement	involvement and engagement		Asif et al (2013); Singh et al (2013)
	Support	Importance of management support	MBNQA, Deming Points	NIST (2016); Sabella (2014); Asif et al (2013)
	Training	Importance of on job training and supervision	MBNQA, Deming Points	NIST (2016); Sabella (2014); Asif et al (2013); Singh et al (2013)
	Process improvement and design	Importance of integrated process improvement and design	MBNQA, EFQM	NIST (2016); Sabella (2014); Asif et al (2013); Singh et al (2013)
	Continuous improvement	Importance of continuous process improvement	MBNQA, EFQM, Deming Points	NIST (2016); Sabella (2014); Asif et al (2013); Singh et al (2013)
	Cost of quality	Agreement on quality improvement being expensive	MBNQA, EFQM	NIST (2016); Sabella (2014)
	Inspection	Location of Inspection	MBNQA, EFQM, Deming Points, QM extension model	NIST (2016); Sabella (2014); Singh et al (2013)
	Variation	Importance of variation reduction	MBNQA, EFQM, Deming Points	NIST (2016); Sabella (2014)
	Quality of supply	Supplier Performance Dimensions	MBNQA, Deming Points	NIST (2016); Asif et al (2013)
	Product and service	Product and Service performance dimensions	MBNQA, EFQM, Deming Points	NIST (2016); Sabella (2014)
<i>Result</i>	Customer specification	Agreement on quality as reflection of customer specification	MBNQA, EFQM	NIST (2016); Sabella (2014)
	Customer satisfaction	Customer satisfaction factors	MBNQA, EFQM	NIST (2016); Sabella (2014); Asif et al (2013); Singh et al (2013)
	Productivity	Importance of productivity against quality	MBNQA, EFQM	NIST (2016); Sabella (2014)
	Financial stability	Importance of quality to bring financial stability	MBNQA, EFQM	NIST (2016); Sabella (2014)
	Ethics	Importance of social aspects of quality improvement	MBNQA, EFQM	NIST (2016); Sabella (2014); Asif et al (2013)

Having considered common ethical measures and practices, the questionnaire was disseminated among populations in both cohorts followed by a three week, follow-up period. In total, 1483 questionnaires were sent to potential respondents of both cohorts in a Business faculty as part of a UK-based University via physical or digital dissemination. Having had careful consideration of questions and terminology of indicators, researchers were confident about the level of potential respondents' self-knowledge and understanding of the questionnaire. This was also supported by conducting a pilot scheme and asking 10 individuals randomly from each cohort to review and answer questions in order to remove any ambiguity in the questionnaire.

The non-parametric testing was conducted for this investigation, since normal distribution was not considered as a pre-assumption, data points were independent from each other and dependent variables are not continuous (Field, 2013). The appropriateness of selecting quantitative data analysis was supported by the literature (Sabella et al, 2014; Moonsamy and Singh, 2014; and Do Nascimento Gambi, 2015). In order to answer RQ1, the median values were used to identify the lowest and highest overall scores for different constructs in each category. The non-parametric “Kruskal-Wallis” and “Mann-Whitney” tests were utilised to identify differences amongst groups in terms of “age”, “gender”, “casual work experience” and “studied courses” and answer RQ2. Statistical Package for the Social Sciences (SPSS) that accommodates non-parametric testing has been used as the software.

4. Median analysis

The median analysis was utilised for this study in order to answer *RQ1* and identify the gap between current vision and knowledge of EYPs as future OM and existing categories with different factors of a TQM framework (MBNQA). This is the appropriate test for this purpose as median is unaffected by the extreme scores on either side of distribution, is relatively unaffected by skewed distributions and can be used with ordinal data (Field, 2013). The variables from different categories of MBNQA framework that were analysed with the Likert score system, were investigated to identify the lowest and highest appreciation of participants towards these TQM variables. The variables with the middle range of median have been disregarded, as this would not represent the significant gap. The variables with the lowest and highest possible median were identified to reflect the least and most recognised factors in MBNQA framework (table II). Interestingly, participants recognised teamwork and dictatorial leadership style as two least important factors for the success of TQM. However, they strongly believe on reward, listening to customers and meeting their requirements via performance measurement and information exchange to promote TQM.

Table II – Top and bottom range of Median analysis of MBNQA framework factors

	N		MEAN	MEDIAN	MODE
	Valid	Missing			
Reward	611	535	5.7234	6.0000	7.00
Gap Analysis	611	535	5.3879	6.0000	6.00
Voice of customer (VOC)	611	535	5.6825	6.0000	7.00
Performance measurement	611	535	5.4157	6.0000	7.00
Support	611	535	5.3584	6.0000	6.00
Information management system	610	536	5.3131	6.0000	6.00
Creativity & innovation	611	535	2.6596	3.0000	3.00
Order & control	611	535	2.7823	3.0000	4.00
Setting & achieving goal	610	536	2.6328	3.0000	4.00
Democratic leadership	611	535	3.1817	3.0000	3.00
Situational leadership	611	535	3.2750	3.0000	4.00
Goal-oriented leadership	611	535	3.2619	3.0000	3.00
Team work	611	535	2.2897	2.0000	1.00
Dictatorial leadership	611	535	1.9836	1.0000	1.00

5. Kruskal-Wallis and Mann-Whitney Tests

In order to answer RQ2, the Kruskal-Wallis test was utilised to identify difference amongst various demographic groups of participants as future OM. The Mann-Whitney test has also been utilised to identify the possible differences between two groups within each category.

The result is presented for each individual ergonomic factor and their groups. The summary of Kruskal-Wallis test for all TQM factors that address difference amongst groups was presented in table III.

Age range factor

It was revealed that there is a significant difference ($p\text{-value} < 0.01$) amongst all age ranges in relation to importance of creativity and innovation (to reflect the developmental organisational culture), listening to the VOC, and recognising the meeting customer specification and retaining satisfied customers as measure of TQM success. As the result of the Mann-Whitney test, it was suggested that there is a significant difference ($p\text{-value} < 0.01$) between 18-19 years old participants with older ages (if aggregated in one group) in relation to the above variables alongside the view on Inspection, importance of collaboration and durability of products/services as critical factors of TQM.

Gender factor

As the result of the Kruskal- Wallis test, it was evident that there is a significant difference ($p\text{-value} < 0.01$) between female and male participants when they have been asked about leadership style, and importance of reward, VOC, employee involvement, support, training and supervision, process improvement and inspection during production in order to achieve TQM. Authors did not apply Mann-Whitney test to analyse the gender, since there were only two groups within this analysis that was covered by Kruskal-Wallis test.

Education subject background factor

It was concluded from the Kruskal-Wallis test that participants from different business and management courses are significantly different when they were asked about the importance of information management system to facilitate customer engagement and promote TQM. Notwithstanding, when more detailed analysis as a result of the Mann-Whitney test, between two individual and independent groups was conducted, the result was different. It was revealed that participants with course background in business management were significantly different compared to their counterparts with educational backgrounds in international business management. Here, differences were found in terms of the importance of creativity and innovation (to reflect the developmental organisational culture) and employee capacity and capability as a workforce factor to promote TQM culture. The level of customer engagement as a measurement tool for customer satisfaction was the only variable with significant difference ($p\text{-value} < 0.01$) between participants with general business management educational background and those with financial management education. Participants with general business management educational background and accounting education were significantly different ($p\text{-value} < 0.01$) in relation to agreeing on meeting customer specification as an important quality factor in TQM. There were no more significant differences between participants with other education backgrounds (i.e. marketing and human resource management management).

Educational experience factor

There were only two groups of participants involved in this study and therefore the Kruskal-Willis test could also represent the purpose of the Mann-Whitney test. It was revealed that post A-level participants are significantly different ($p\text{-value} < 0.01$) with ready-to be graduated future YEPs in relation to importance of creativity and innovation (to reflect the developmental organisational culture), flexibility of work systems and meeting customer specification as critical factors of TQM. Their view was also significantly different in terms of the importance of inspection before delivering to the customer and also importance of customer retention as the measure for customer satisfaction.

Table III – Summary of TQM measures that address significant differences amongst groups

Demographic measure	TQM Factor with differences amongst groups	Chi-Square	df	Asymp. Sig
Age Range	Creativity & innovation	12.547	2	0.002
	Voice of customer	15.507	2	0.000
	Customer specification	13.252	2	0.001
	Number of customer retention	13.287	2	0.001
Gender	Dictatorial leadership	18.206	1	0.000
	Reward	24.584	1	0.000
	Voice of Customer	11.825	1	0.001
	Employee involvement and engagement	22.080	1	0.000
	Support	7.860	1	0.005
	Training & supervision	22.221	1	0.000
	Process improvement & design	9.583	1	0.002
	Inspection during production	7.469	1	0.006
Education subject background	Information system	22.785	7	0.002
Education experience	Creativity & innovation	18.119	1	0.000
	Work system	10.669	1	0.001
	Customer specifications	10.236	1	0.001
	Inspection before delivery to customer	6.728	1	0.009
	Number of customer retention	15.260	1	0.000

Casual work experience factor

This factor was decided to be analysed by authors to investigate whether the non- career informed casual work experience would have influence on the view of the participants. Two groups of participants with and without any work experience have been analysed via Mann-Whitney test. The result revealed that they are only different significantly ($p\text{-value} < 0.01$) in relation to importance of social media to collect the VOC and importance of employees' behaviour of supplier as the metric to measure supplier's quality.

6. Concluding remarks and managerial implications

This study intended to identify the clear gap between the current young and educated generation as future EYPs or OM with common TQM models such as MBNQA. It was also

decided to identify if there is any difference amongst groups. It was clearly evident from this analysis that there are some serious concerns in relation to lack of appreciation towards the importance of organisational culture and leadership required to establish TQM culture amongst this generation. In fact, it was really difficult to identify to which CVF category this generation belongs to, since the gap in all of variables in this category was quite significant. They recognised the participative leadership with teamwork decision making as the most important leadership style for TQM establishment. However, its low significance recommends lack of leadership appreciation amongst them. It was also worrying that higher education would not dramatically change the view of future OM in relation to QM. Therefore, EYPs need tremendous amount of supervision in their workplace and as part of their career development to recognise the strong HR integration with QM. In contrast, the customer orientation of TQM seems to be strongly recognised by this generation alongside integrated information and performance measurement systems.

Nevertheless, the journey in higher education seems to be effective in relation to changing the view of EYPs about recognition of developmental culture and customisation to support TQM establishment in organisations. It is clear that female EYPs as future OM recognised softer elements of TQM such as leadership, reward and employee involvement in decision making more than their male counterparts do. This is also extended to some hard elements, such as supervision and training, which female future OM believe to be of higher importance. The educational subject background and experience made future EYPs heterogeneous in relation to recognition of organisational culture as a soft element and customisation as a hard element of TQM establishment.

Overall, it is obvious that the current young generation would not be able to follow TQM frameworks and models comprehensively to establish sustainable QM and operation in their organisation or department, unless changes in their attitude towards softer elements of these models, such as organisational culture and leadership as key derives for TQM, are made. This study only covered the business and management-related, educated, future OM and did not certainly have a comprehensive view. The similar study could be extended to other higher education backgrounds such as engineering, social sciences and health. As a future study, it is also crucial to investigate the differences amongst these future managers and future managers with no higher education background to understand their view in relation to TQM.

Reference

- Algassem, F., Yang, Q. P. and Au, J. (2014), "Application of Lean Six Sigma principles to Food Distribution SMEs", *American Academic and Scholarly Research Journal*, Vol. 6 No. 4, pp. 251-258.
- Asif, M., Usman Awan, M. Khalid Khan, M. and Ahmad., N. (2013), "A model for total quality management in higher education", *Qual Quant* Vol. 47 No. 4, pp. 1883-1904.
- Bhat, S., Gijo, E.V. and Jnanesh, N. A. (2014), "Application of Lean Six Sigma methodology in the registration process of a hospital", *International Journal of Productivity and Performance Management*, Vol. 63 No. 5, pp. 613-643.
- Chan, H. K., Wang, X. Lacka, E. and Zhang, M. (2016), "A mixed-method approach to extracting the value of social media data", *Journal of Production and Operations Management*, Vol. 25 No. 3, pp. 568-583.
- Do Nascimento Gambi, L., Boer, H. Gerolamo, M. C. Jorgensen, F. and Carpinetti, L. C. R. (2015), "The relationship between organisational culture and quality techniques, and its impact on operational performance", *International Journal of Operations and Production Management*. Vol. 35 No. 10, pp. 1460-1484.

Dong, Y., Xu, K. Xu, Y. and Wan. X. (2016), "Quality management in multi-level supply chains with outsourced manufacturing", *Journal of Production and Operations Management*, Vol. 25 No. 2, pp.290-305.

Dora, M. and Gellynck, X. (2015), "Lean Six Sigma Implementation in a Food Processing SME: A Case Study", *Quality and Reliability Engineering International*, Vol. 31 No. 7, pp.1151-1159.

Ergun, O. Gui, L. Stamm, J.L.H. Keskinocak, P. and Swann. J. (2014), "Improving humanitarian operations through technology-enabled collaboration", *Journal of Production and Operations Management*, Vol. 23 No. 6, pp. 1002-1014.

Evans, J. (2013), "Insights on the future of quality management research", *The Quality Management Journal*. Vol. 20 No. 1, pp. 48-55.

Field, A. (2013), "Discovering Statistics, Using SPSS, *Sage Publications Ltd*, London, UK.

Graham, N. K., Arthur, Y.D. and Mensah, D.P. (2014), "Managerial role in ensuring successful programme in Ghanaian printing firms", *The TQM Journal*, Vol. 26 No. 5, pp. 398-410.

Guillot-Soulez, C., and Soulez, S. (2014), "On the heterogeneity of Generation Y job preferences", *Employee Relations*, Vol. 36 No. 4, pp. 319-332.

Harley, B., Sargent, L. and Allen, B. (2010), "Employee responses to high performance work systems practices: an empirical test of the disciplined worker thesis", *Work, Employment and society*, Vol. 24 No. 4, pp. 740-760.

Hellet, E. (2013), "We all share a common vision and passion: Early years' professionals reflect upon their leadership of practice role", *Journal of Early Childhood research*, Vol. 11 No. 3, pp. 312-325.

Hilton, R.J. and Sohal, A. (2012), "A conceptual model for the successful deployment of Lean Six Sigma", *International Journal of Quality and Reliability management*, Vol. 29 No. 1, pp. 54-70.

Isa, M. F. M. and Usmen, M. (2015), "Improving university facilities services using Lean Six Sigma: a case study", *Journal of Facilities Management*, Vol. 13 No. 1, pp.70-84.

Jayaram, J. and Xu, K. (2016), "Determinants of quality and efficiency performance in service operations", *International Journal of Operations and Production Management*, Vol. 36 No. 3, pp.265-285.

Jimenez-Jimenez, D. Martinez-Costa, M. Martinez-Lorente, A.R. and Ahmed Dine Rabeh, H. (2015), "Total quality management performance in multinational companies, A learning perspective", *The TQM Journal*, Vol. 27 No. 3, pp. 328-340.

Jones, M.R. (2014), "Identifying critical factors that predict quality management program success: Data mining analysis of Baldrige Award Data", *The Quality Management Journal*, Vol. 21 No. 3, pp. 49-61.

Knapp, S. (2015), "Lean Six Sigma implementation and organisational culture", *International Journal of health Care Quality Assurance*, Vol. 28 No. 8, pp. 855-863.

Moonsamy, V. and Singh, S. (2014), "Using factor analysis to explore principal components for quality management implementation", *Qual Quant*, Vol. 48 No. 2, pp. 605-622.

Mosadeghrad, A. M. (2015), "Developing and validating a total quality management model for healthcare organisation, *The TQM Journal*, Vol. 27 No. 5, pp. 544-564.

Ng, E., Lysons, S.T. and Schweitzer, L. (2012), "Managing the new workforce: International Perspectives on the Millennial Generation", *Edward Elgar Publishing*, Northampton, MA.

NIST (National Institute of Standard and Technology) (2016), "2015-2016 Baldrige Excellence Framework", access via http://www.nist.gov/baldrige/publications/business_nonprofit_criteria.cfm, accessed on 3rd Nov 2016.

Njeru, M. N. and Omondi, M. (2016), "Relationship between Total Quality Management and employee performance in public universities in Kenya: A case study of kirinyaga university college", *The Strategic Journal of Business and Change Management*, Vol. 3 No. 2, pp. 455-483.

- Pascal, A., Thomas, C. and Romme, A.G.L. (2013), "Developing a human-centred and science-based approach to design: The knowledge Management Platform Project", *British Journal of Management*, Vol. 24 No. 2, pp. 264-280.
- Phan, P. and Chambers, C. (2013), "Advancing theory in entrepreneurship from the lens of Operations Management", *Production and Operations management*, Vol. 22 No. 6, pp. 1423-1428.
- Roth, A., Singhal, J. Singhal, K. and Tang, C. S. (2016), "Knowledge creation and dissemination in operations and supply chain management", *Journal of Production and Operations Management*, Vol. 25 No. 9, pp. 1473-1488.
- Sabella, A., Kashou, R. and Omran, O. (2014), "Quality management practices and their relationship to organisational performance", *International Journal of Operations and Production Management*, Vol. 34 No. 12, pp. 1487-1505.
- Singh, P. J., Ming Wee Dean, C. and Chee-Chuong, S. (2013), "Deming management method: Subjecting theory to moderating and contextual effects", *The Quality Management Journal*, Vol. 20 No. 3, pp. 41-69.
- Slack, N., Brandon-Jones, A. and Johnson, R. (2013), "Operations Management", 7th edition, *FT Prentice Hall, Pearson Education*, Harlow, UK.
- Stanton, P., Gough, R. Ballardie, R. Bartram, T. Bamber, G. J. and Soha, A. (2014), "Implementing lean management/six sigma in hospitals: beyond empowerment or work intensification?", *International Journal of Human Resource management*, Vol. 25 No. 21, pp. 2926-2940.
- Starr, M. K. (2016), "Commentary on knowledge creation and dissemination in Operations and Supply Chain Management", *Journal of Production and Operations Management*, Vol. 25 No. 9, pp. 1489-1492.
- Suarez, E., Roldan, J. L. and Calvo-Mora, A. (2014), "A structural analysis of the EFQM Model: An assessment of the mediating role of process management", *Journal of Business Economics and Management*, Vol. 15 No. 5, pp. 862-885.
- Van Kemenade, E. (2014), "Theory C: the near future of quality management", *The TQM Journal*, Vol. 26 No. 6, pp. 650-657.
- Venkat, A., Kekre, S. Hegde, G. G. Shang, J. and Campbell, T. P. (2015), "Strategic management of operations in the emergency department", *Journal of Production and Operations management*, Vol. 24 No. 11, pp. 1706-1723.
- Walker, H., Seuring, S. Sarkins, J. and Klassen, R. (2014), "Sustainable operations management: recent trends and future directions", *International Journal of Operations and Production Management*, Vol. 34 No. 5, pp. 720-721.
- Weckenmann, A., Akkasoglu, G. and Werner, T. (2015), "Quality management – history and trends", *The TQM Journal*, Vol. 27 No. 3, pp. 281-293.
- Whyman, P. B., Baimbridge, M. J. Buraimo, B. A. and Petrescu, A. I. (2015), "Workplace flexibility practices and corporate performance: evidence from the British private sector", Vol. 26 No. 3, pp. 347-364.